

(12) United States Patent Chen

(10) **Patent No.:**

US 9,252,389 B2

(45) Date of Patent:

Feb. 2, 2016

(54) FUNCTIONAL FILM, ENVIRONMENTALLY SENSITIVE ELECTRONIC DEVICE PACKAGE, AND MANUFACTURING METHODS THEREOF

(71) Applicant: Industrial Technology Research

Institute, Hsinchu (TW)

Inventor: Kuang-Jung Chen, Hsinchu County

Assignee: Industrial Technology Research

Institute, Hsinchu (TW)

Subject to any disclaimer, the term of this (*) Notice:

patent is extended or adjusted under 35

U.S.C. 154(b) by 180 days.

Appl. No.: 13/909,082 (21)

(22)Filed: Jun. 4, 2013

(65)**Prior Publication Data**

US 2014/0167294 A1 Jun. 19, 2014

(30)Foreign Application Priority Data

Dec. 14, 2012 (TW) 101147602 A

(51) Int. Cl. H01L 51/52

(2006.01)

(52) U.S. Cl.

CPC H01L 51/5246 (2013.01); H01L 2251/5338 (2013.01); H01L 2924/0002 (2013.01); Y10T 156/10 (2015.01); Y10T 156/109 (2015.01);

Y10T 428/1476 (2015.01)

(58) Field of Classification Search

None

See application file for complete search history.

(56)References Cited

U.S. PATENT DOCUMENTS

6,576,351 B2	6/2003	Silvernail
6,866,901 B2	3/2005	Burrows et al.
7,264,529 B2	9/2007	Wada et al.
7,541,671 B2	6/2009	Foust et al.
7,839,005 B2	11/2010	Hsu et al.
8,093,512 B2	1/2012	Chen et al.
8,253,329 B2	8/2012	Kostka et al.
	(Continued)	

(Continued)

FOREIGN PATENT DOCUMENTS

CN	101316462	12/2008
JP	2010225362	10/2010
	ntinued) JBLICATIONS	

R.M. Van Der Wel, et al., "B-Dry®: Edge Sealant For Sensitive Photovoltaic Modules", IEEE, 37th Photovoltaic Specialists Conference (PVSC), Jun. 19-24, 2011, pp. 001371-001374.

(Continued)

Primary Examiner — Anthony Ho Assistant Examiner — Samuel Lair

(74) Attorney, Agent, or Firm — Jianq Chyun IP Office

(57)ABSTRACT

An environmentally sensitive electronic device package including a first adhesive, at least one first side wall barrier, a first substrate, and a second substrate is provided. The first adhesive has a first surface and a second surface opposite to the first surface. The first side wall barrier is distributed in the first adhesive. The first substrate is bonded with the first surface. The first substrate has an environmentally sensitive electronic device formed thereon and the environmentally sensitive electronic device is surrounded by the first side wall barrier. The second substrate is bonded with the second surface. A manufacturing method of the environmentally sensitive electronic device package is also provided.

13 Claims, 13 Drawing Sheets

